

FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST6200
WAFERTECH, L.L.C.

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INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST6200. The Department of Ecology (Department) is proposing to issue this permit, which will allow discharge of wastewater to the City of Camas Publicly Owned Treatment Works (POTW). This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law [Revised Code of Washington (RCW) 90.48.080 and 90.48.160] requires that a permit be issued before discharge of wastewater to waters of the state is allowed. This statute includes commercial or industrial discharges to sewerage systems operated by municipalities or public entities which discharge into public waters of the state. Regulations adopted by the state include procedures for issuing permits and establish requirements which are to be included in the permit [Chapter 173-216 Washington Administrative Code (WAC)].

This fact sheet and draft permit are available for review by interested persons as described in Appendix A—Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D—Response to Comments.

Table 1: General information

Applicant	Joseph Kalinowski, Director of Facilities
Facility Name and Address	WaferTech, L.L.C. 5509 N.W. Parker Street Camas, Washington 98607-9299
Type of Facility:	Semiconductor Integrated Circuit Fabrication Facility, SIC 3674
Facility Discharge Location	Latitude: 45° 37' 06" N Longitude: 122° 27' 22" W
Treatment Plant Receiving Discharge	City of Camas Publicly Owned Treatment Works (POTW)
Contact at Facility	Name: Doug Moody, CIH Title: EH&S Manager Telephone #: 360-817-3308
Responsible Official	Name: Doug Moody, CIH Title: EH&S Manager Address: 5509 NW Parker St., Camas, WA 98607 Telephone #: 360-817-3308 FAX #: 360-817-3049

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

WaferTech is a Significant Industrial User subject to Categorical Pretreatment Standards listed in 40 CFR 469, Subpart A, Semiconductor Subcategory.

LOCATION

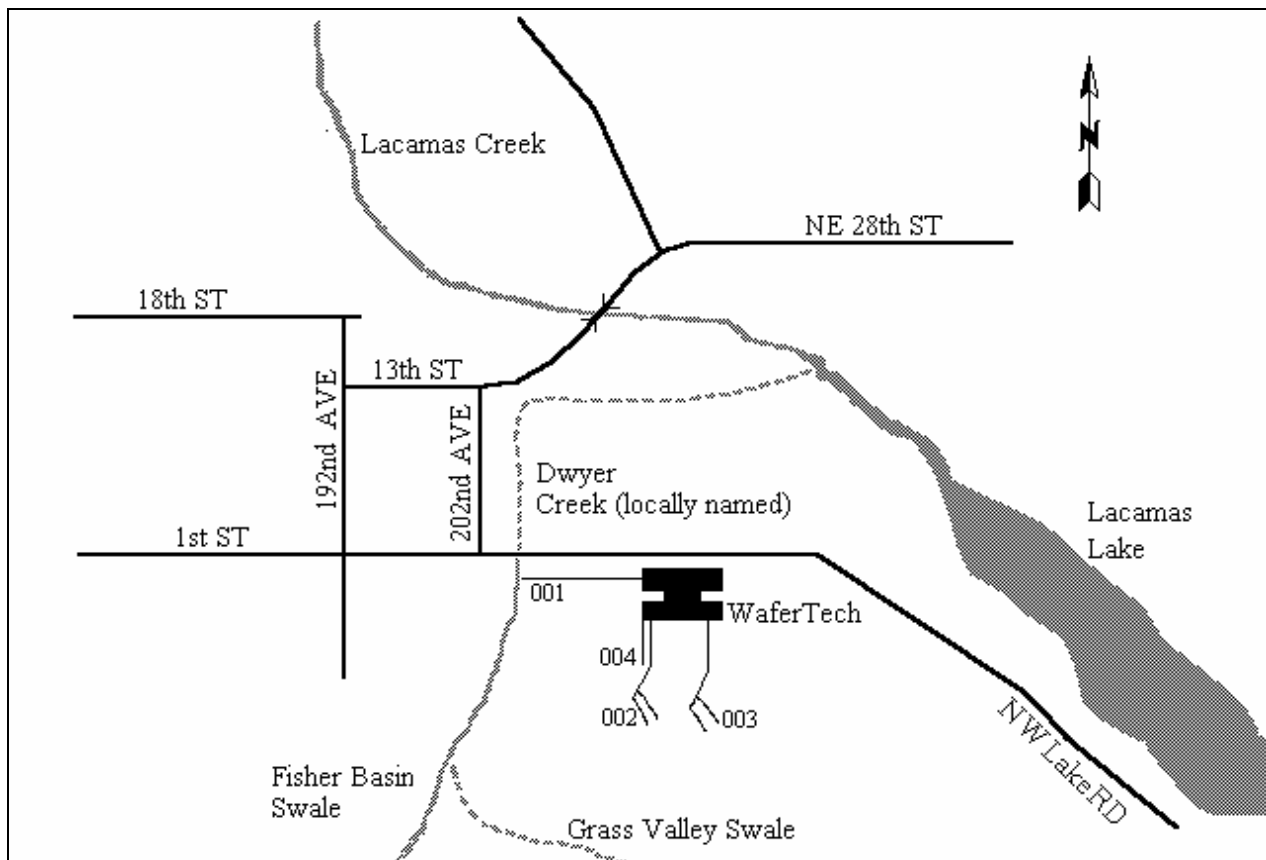


Figure 1: Vicinity map for the WaferTech facility.

The map shows the approximate location of roads and waterbodies in the immediate vicinity of WaferTech as well as outfalls. Outfall 001 is an outfall to Lacamas Lake via Dwyer Creek; outfalls 002 and 003 are outfalls to the Grass Valley Swale Wetlands; outfall 004 is an outfall to the POTW, and it is the only permitted outfall by this permit.

HISTORY

The WaferTech facility was constructed in early 1998. Initially WaferTech planned to discharge treated wastewater to surface waters (Lacamas Lake via Dwyer Creek), to a wetland on site (Grass Valley Swale), and the City of Camas POTW. Therefore, in 1997 WaferTech submitted a National Pollutant Discharge Elimination System (NPDES) permit application, an application for a state waste discharge permit to discharge to the City of Camas POTW, and an application for a state waste discharge permit to discharge to the ground. Currently WaferTech discharges only to the POTW.

INDUSTRIAL PROCESSES

WaferTech is a semiconductor integrated circuit (IC) fabrication facility, Standard Industrial Classification (SIC) Code number for the facility is 3674.

Blank silicon wafers are used as the main raw material in the IC fabrication process. The ICs are constructed on the surface of the blank wafers by conveying the wafers through a number of different process areas. Process areas include Etching, Photolithography, Diffusion, Implant, Physical Vaporized Deposition, Chemical Vapor Deposition, Chemical/Mechanical Polishing (CMP), and Backside Grinding (BG). These processes, as well as facility maintenance activities, generate wastewater. Wafers proceed through the process areas several times in various sequences depending on the specific type of IC. The end products of the fabrication process are wafers that contain several different types of ICs, or “die,” which are packaged and shipped to WaferTech’s clients.

The WaferTech facility produces Mixed Mode, Logic, and SRAM wafers. Finished product quantities can vary significantly depending on customer demand. However, full capacity of the facility is 45,000 wafer per month.

TREATMENT PROCESSES

DI/TMAH Neutralization

The system automatically neutralizes the tetramethylammoniumhydroxide (TMAH) wastewater and the wastewater from the regeneration of the deionizing (DI) unit with the addition of H_2SO_4 and NaOH.

Ammonia Stripper

The ammonia stripper will remove the ammonia from alkaline wastewater in a packed bed tower using a two-pass, semi-continuous batch process. The treated wastewater is collected in the stripper sump tank and then pumped to the HF batch treatment system.

HF Batch Treatment for Fluoride Removal

This tank is designed as a stirred reactor used to precipitate fluoride through a chemical reaction using $CaCl_2$, forming very insoluble calcium fluoride salt. Precipitated fluoride sludge will be removed by sedimentation in a clarifier.

Chemical/Mechanical Polish and Back-grind Treatment

Treatment of this wastewater includes flocculation/clarification with the use of a polymer, NaOH, and H_2SO_4 . Effluent flows to the cooling towers. Sludge from the bottom of the clarifier is pumped to the silica sludge aging tank where it is allowed to settle further. Silica bearing solids are trucked off site.

Acid Waste Neutralization

Water coming from the fabrication process is neutralized in these tanks using NaOH and H_2SO_4 and then sent to the recycle system. The system consists of three reaction stages. Stage 1 takes the pH from 0 to 4 or from 14 to 12. Stage 2 changes the pH from 4.0 to 6.0 or 12 to 8.5. Stage 3 acts as a fine tune or redundant stage in the event of failure of a previous stage.

Recycle System

The recycle treatment system includes activated carbon beds to remove low-level organics and residual oxidants from the treated water. Multivalent and some mono-valent cations and anions are then removed using ion exchange. Before going to the reverse osmosis (RO) units, the pretreated water will be filtered

to remove particulates greater than 3 micron in size, and treated using 185 nm ultraviolet (UV) purifiers. The 185 nm UV is for biological control preventing bio fouling of the RO membranes and to provide additional total organic carbon (TOC) reduction. The water is then pumped through the RO membranes. The purpose of the RO units is to insure the reduction of TOC to less than 10 ppm, and to remove additional total dissolved solids (TDS) to a quality of less than 10 ppm TDS. RO permeate is sent to one of three recycle water holding tanks.

Condensate Treatment System

Atmospheric condensation water from nitrogen generation unit and heating-ventilation-air-conditioning (HVAC) systems is treated with an oil/water separator prior to release.

PERMIT STATUS

The previous permit for this facility was issued on April 13, 1998; and modified on September 30, 1998, April 27, 2000, and September 28, 2001.

An application for permit renewal was submitted to the Department on July 2, 2002, and accepted by the Department on August 1, 2002. The portion of the application for discharge to surface water was withdrawn on December 29, 2003, leaving the discharge to POTW for the review of the Department.

Sulfuric Acid Treatment Modification Permit Application was received on April 22, 2005, and approved on April 28, 2005. The permit authorizes to treat and discharge 500,000 pounds of sulfuric acid only after the Toxicity Study Report and Plan is received and approved by the Department.

EFFLUENT TOXICITY

Goodfellow et al (2000) have determined that total dissolved solids (TDS), the individual ions within TDS, or ion imbalances arising from TDS can all cause toxicity to the common whole effluent toxicity (WET) test organisms. The Permittee's discharge to the City of Camas wastewater treatment plant (WWTP) contains very high concentrations of TDS (4,800 mg/L) consisting of several of the ions known to adversely affect organisms in toxicity tests. The proposal to add the sulfuric acid wastestream to this discharge would increase TDS to 5,200 mg/L and increase the amount of sulfate discharged to the city WWTP.

The City of Camas may someday be required by its NPDES permit to demonstrate compliance with chapter 173-205 WAC by monitoring the effluent discharge for whole effluent toxicity. The WaferTech discharge has been 16 percent to 27 percent of the influent at the city WWTP. Ecology is concerned that the high percentage of the Permittee's wastewater in the city WWTP influent could make it difficult for the City of Camas to comply with whole effluent toxicity requirements due to TDS and its constituent ions. In order to answer this concern, the permit contains a requirement for a study to determine the potential impacts of the WaferTech discharge on the toxicity of the city's effluent.

Another concern is that the sudden stoppage of the WaferTech discharge could create an osmotic stress for the bacteria in the city's activated sludge. If this happens, treatment efficiency might drop and the city might not be able to meet other permit limitations on its effluent. The permit requires that WaferTech study the potential for osmotic stress on the city's WWTP caused by sudden changes in TDS in the influent and prepare a plan to prevent this problem.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on February 13, 2001.

During the history of the previous permit, the Permittee has violated the permit limits as listed in Table 2, based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

Table 2: List of violations of the previous permit limits

Begin Date	Outfall	Parameter	Units	Value	Mini Limit	Max Limit
Jul-99	002	pH	Standard Units (S.U.)	6.0	6.5	
Aug-99	002	pH	S.U.	6.2	6.5	
Sep-99	002	pH	S.U.	6.1	6.5	
Oct-99	002	pH	S.U.	5.5	6.5	
Aug-99	003	pH	S.U.	6.4	6.5	
Sep-98	004	pH	S.U.	5.3	6.0	
Nov-98	004	Fluoride, total	Milligrams per liter (mg/L)	37.2		32
May-99	004	pH	S.U.	10.8		9
Apr-01	004	pH	S.U.	10.4		9
Apr-04	004	pH	S.U.	11.3		11

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the permit application and in discharge monitoring reports (DMRs).

The proposed wastewater discharge is characterized, as reported in the DMRs, for the parameters graphed in Figure 2 through Figure 12, and Table 7, Appendix C.

Figure 2 Alkalinity—maximum daily and average monthly concentrations

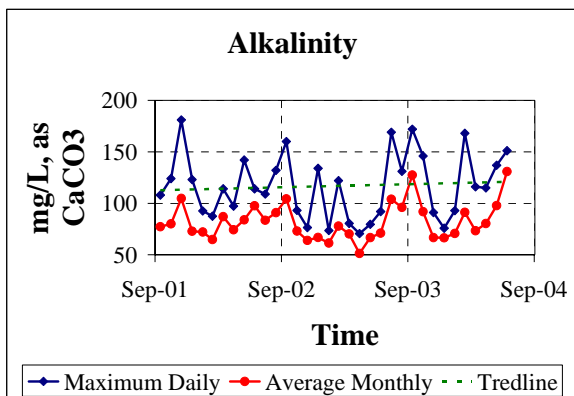


Figure 3 Kjeldahl nitrogen—maximum daily and average monthly concentrations

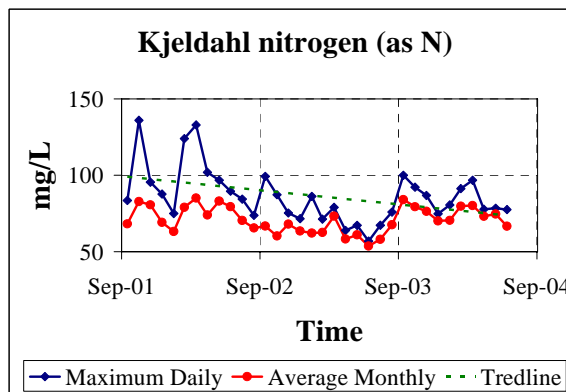


Figure 4 Flow—average monthly

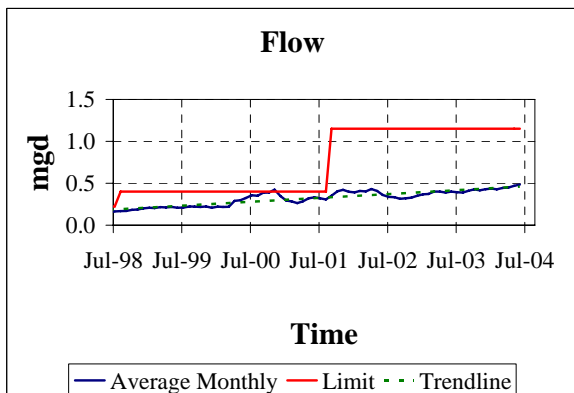


Figure 5 Flow—maximum daily

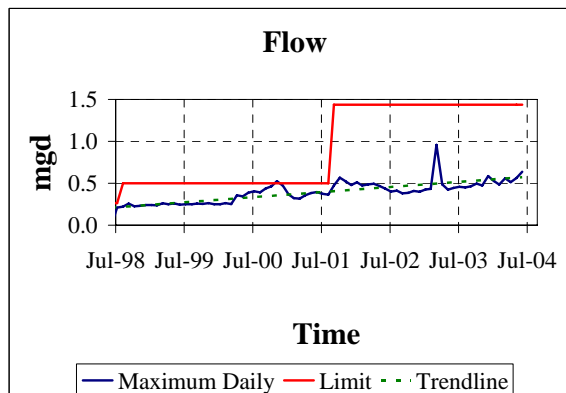


Figure 6 Fluoride—average monthly concentrations

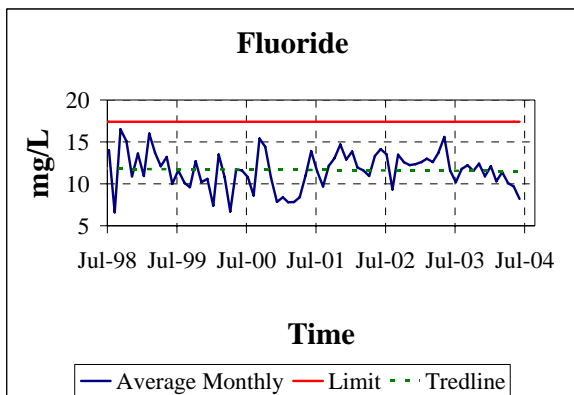


Figure 7 Fluoride—maximum daily concentrations

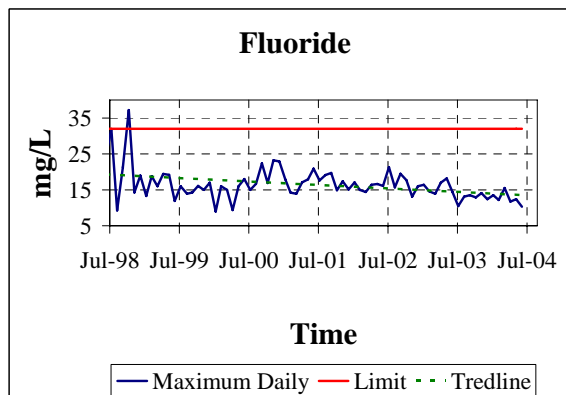


Figure 8 Molybdenum—maximum daily concentrations

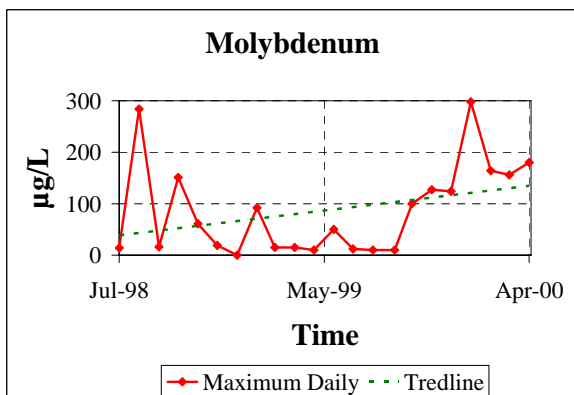


Figure 9 Copper—maximum daily concentrations

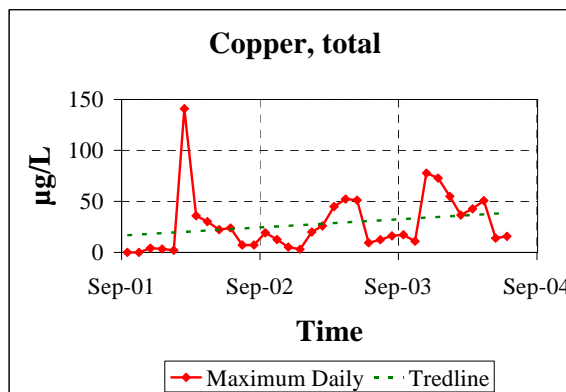


Figure 10 Oil and Grease (O&G)—maximum daily concentration

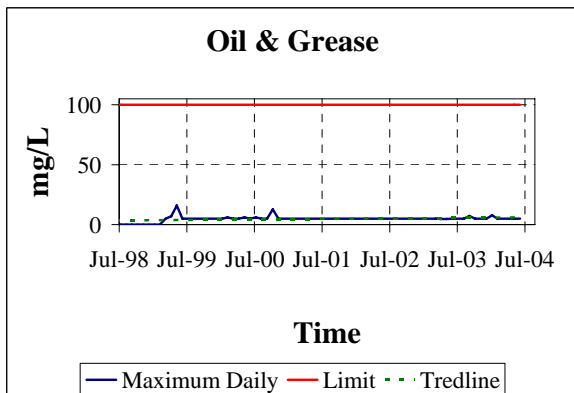


Figure 11 Total toxic organics (TTO)—maximum daily concentrations

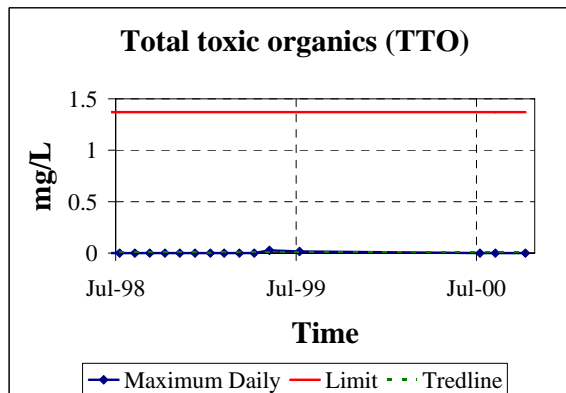
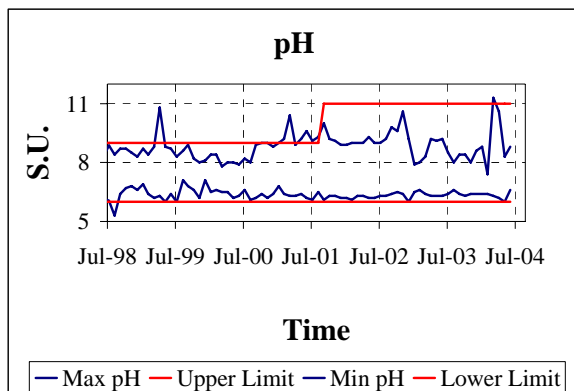


Figure 12 pH—minimum and maximum daily



PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be based on the technology available to treat the pollutants (technology-based) or be based on the effects of the pollutants to the POTW (local limits). Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not interfere with the operation of the POTW.

The more stringent of the local limits-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

The RCW 90.48.010 and WAC 173-216-020, 173-216-110, and 173-200-130 require the use of all known, available and reasonable methods of prevention, control and treatment (AKART) before any wastes and other materials and substances enter waters of the state or a POTW. AKART is a technology based standard for the prevention and control of pollution.

For the semiconductor manufacturing industry, EPA effluent limitations for Electrical and Electronic Components, Subpart A, Semiconductor Subcategory (40 CFR 469.10) are equivalent to AKART limitations. For an indirect discharge technology based limits are derived from a previous AKART determination by the Department for Fluoride and the following EPA effluent limitations: Pretreatment Standards for New Sources (PSNS). These limitations have been determined to be technologically and economically achievable for the semiconductor manufacturing industry. The technology based (AKART) limits are shown in Table 3 below.

Table 3: Technology-Based Effluent Limitations

Parameter	Units	Average Monthly ^a	Maximum Daily ^b
Total toxic organics (TTO)^c	Milligrams per liter (mg/L)	N/A	1.37
Fluoride, total	mg/L	17.4	32.0

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Parameter	Units	Average Monthly ^a	Maximum Daily ^b
^a The average monthly effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.			
^b The daily maximum effluent limitation is defined as the highest allowable daily discharge.			
^c Total toxic organics (TTO) is defined for this industry as the sum of the concentrations of each of the toxic organics listed in 40 CFR 469.12 which is found in the discharge at a concentration greater than 10 micrograms per liter (µg/l):			
carbon tetrachloride	trichloroethylene	anthracene	
chloroform	2 Chlorophenol	bis (2-ethylhexyl) phthalate	
dichlorobromomethane	2,4 Dichlorophenol	butyl benzyl phthalate	
ethylbenzene	2 Nitrophenol	1,2 Dichlorobenzene	
1,2 Dichloroethane	4 Nitrophenol	1,3 Dichlorobenzene	
1,1 Dichloroethylene	pentachlorophenol	1,4 Dichlorobenzene	
methylene chloride	phenol	1,2 Diphenylhydrazine	
tetrachloroethylene	2,4,6 Trichlorophenol	di-n-butyl phthalate	
toluene	isophorone	1,2,4 Trichlorobenzene	
1,1,1 Trichloroethane	naphthalene	1,1,2 Trichloroethane	

Under 40 CFR 469.13, a certification of proper solvent management may be submitted in lieu of monitoring if the facility has an approved solvent management plan. In order to secure this exemption from regular monthly monitoring for TTO, WaferTech must make the request in writing and submit a solvent management plan. WaferTech will be required to complete 12 months of TTO monitoring before the exemption from regular monitoring will be allowed. The Department must approve the solvent management plan in order for the monitoring exemption to go into effect. After approval of the solvent management plan, the Department may allow WaferTech to make the following certification as a comment to the monthly discharge monitoring report (DMR):

"Based on my inquiry of the person or persons directly responsible for managing compliance with the pretreatment standard for TTO, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics into the wastewater has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the solvent management plan submitted to the Department."

EFFLUENT LIMITATIONS BASED ON LOCAL LIMITS

In order to protect the City of Camas POTW from pass-through, interference, concentrations of toxic chemicals that would impair beneficial or designated uses of sludge, or potentially hazardous exposure levels, limitations for certain parameters are necessary. These limitations are based on local limits established by the POTW and codified in ordinance. Applicable limits for this discharge include the following:

Table 4: Local limits

Parameter	Units	Limits
Temperature	Degree Fahrenheit (°F)	150
Oil and Grease (O&G)	Milligrams per liter (mg/L)	100
pH	Standard units (SU)	Within the range 5.5 to 9.0

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Five-day biochemical oxygen demand (BOD ₅)	mg/L	300
Total suspended solids (TSS)	mg/L	350

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT ISSUED APRIL 13, 1998

DISCHARGES TO DWYER CREEK—OUTFALL 001

Table 5: Effluent limitations for Outfall 001

Parameter	Units	Existing Limits		Proposed Limits	
		Monthly Average ^a	Daily Maximum ^b	Monthly Average ^a	Daily Maximum ^b
Temperature	Degrees Celsius (°C)	----	16	No discharge allowed	
Fluoride	Milligrams per liter (mg/L)	----	1.0		
Total Toxic Organics (TTO ^c)	mg/L	----	1.37		
Total Organic Carbon (TOC)	mg/L	3.0	5.0		
pH	Standard units (S.U.)	Within the range of 6.5 to 8.5 standard units			
^a The monthly average effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.					
^b The daily maximum effluent limitation is defined as the highest allowable daily discharge.					
^c TTO is defined for this industry as the sum of the concentrations of each of the toxic organics listed in 40 CFR 469.12 which is found in the discharge at a concentration greater than 10 micrograms per liter (µg/l):					
carbon tetrachloride	trichloroethylene	anthracene			
chloroform	2 Chlorophenol	bis (2-ethylhexyl) phthalate			
dichlorobromomethane	2,4 Dichlorophenol	butylbenzyl phthalate			
ethylbenzene	2 Nitrophenol	1,2 Dichlorobenzene			
1,2 Dichloroethane	4 Nitrophenol	1,3 Dichlorobenzene			
1,1 Dichloroethylene	pentachlorophenol	1,4 Dichlorobenzene			
methylene chloride	phenol	1,2 Diphenylhydrazine			
tetrachloroethylene	2,4,6 Trichlorophenol	di-n-butyl phthalate			
toluene		isophorone			
1,1,1 Trichloroethane		naphthalene			
1,1,2 Trichloroethane		1,2,4 Trichlorobenzene			

Based on the wastewater information provided in the application Table 7, Appendix C, there is not reasonable potential to violate any local limits in Table 4 except pH.

Table 6: Effluent limitations for Outfall 004

Parameter	Units	Existing Limits		Proposed Limits	
		Monthly Average ^a	Daily Maximum ^b	Monthly Average ^a	Daily Maximum ^b
Flow	Gallons per day (GPD)	1,150,000	1,437,500	1,150,000	1,437,500
Oil and Grease, Total	Milligrams per liter (mg/L)	----	100	N/A	N/A
Fluoride	mg/L	17.4	32.0	17.4	32.0
Total Toxic Organics (TTO ^c)	mg/L	----	1.37	N/A	1.37
pH	Standard units (S.U.)	within the range of 6.0 to 11.0		within the range of 6.0 to 11.0	
^a The monthly average effluent limitation is defined as the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.					
^b The daily maximum effluent limitation is defined as the highest allowable daily discharge.					
^c TTO is defined for this industry as the sum of the concentrations of each of the toxic organics listed in 40 CFR 469.12 which is found in the discharge at a concentration greater than 10 micrograms per liter (µg/l):					
carbon tetrachloride	trichloroethylene	anthracene			
chloroform	2 Chlorophenol	bis (2-ethylhexyl) phthalate			
dichlorobromomethane	2,4 Dichlorophenol	butylbenzyl phthalate			
ethylbenzene	2 Nitrophenol	1,2 Dichlorobenzene			
1,2 Dichloroethane	4 Nitrophenol	1,3 Dichlorobenzene			
1,1 Dichloroethylene	pentachlorophenol	1,4 Dichlorobenzene			
methylene chloride	phenol	1,2 Diphenylhydrazine			
tetrachloroethylene	2,4,6 Trichlorophenol	di-n-butyl phthalate			
toluene		isophorone			
1,1,1 Trichloroethane		naphthalene			
1,1,2 Trichloroethane		1,2,4 Trichlorobenzene			

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, and that effluent limitations are being achieved (WAC 173-216-110).

The monitoring schedule is detailed in the proposed permit under Condition S2 specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S2 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges [WAC 173-216-110 and 40 CFR 403.12 (e), (g), and (h)].

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S3 as authorized under Chapter 173-240-150 WAC and Chapter 173-216-110 WAC. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

PROHIBITED DISCHARGES

Certain pollutants are prohibited from being discharged to the POTW. These include substances which cause pass-through or interference, pollutants which may cause damage to the POTW or harm to the POTW workers (Chapter 173-216 WAC) and the discharge of designated dangerous wastes not authorized by this permit (Chapter 173-303 WAC).

DILUTION PROHIBITED

The Permittee is prohibited from diluting its effluent as a partial or complete substitute for adequate treatment to achieve compliance with permit limitations.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan.

SLUG DISCHARGE CONTROL PLAN

The Department has determined that the Permittee has the potential for a batch discharge or a spill that could adversely effect the POTW therefore a slug discharge control plan is required (40 CFR 403.8 (f)).

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to POTW permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department

prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control production or wastewater discharge in order to maintain compliance with the permit. Condition G10 prohibits the reintroduction of removed pollutants into the effluent stream for discharge. Condition G11 requires the payment of permit fees. Condition G12 describes the penalties for violating permit conditions.

PUBLIC NOTIFICATION OF NONCOMPLIANCE

A list of all industrial users which were in significant noncompliance with Pretreatment Standards or Requirements during any of the previous four quarters may be annually published by the Department in a local newspaper. Accordingly, the Permittee is apprised that noncompliance with this permit may result in publication of the noncompliance.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics. The Department proposes that the permit be issued until June 30, 2008.

REFERENCES FOR TEXT AND APPENDICES

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Goodfellow, W.L., L.W. Ausley, D.T. Burton, D.L. Denton, P.B. Dorn, D.R. Grothe, M.A. Heber, T.J. Norberg-King and J.H. Rodgers.

2000. Major Ion Toxicity in Effluents: A Review with Permitting Recommendations.
Environ Toxicol Chem 19: 175-182.

APPENDICES

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on May 16, 2004, and May 23, 2004, in the *Columbian* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on August 16, 2005, in the *Columbian* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Industrial Unit Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6280, or by writing to the address listed above.

This permit was written by Jacek Anuszewski, P.E.

APPENDIX B—GLOSSARY

Ammonia—Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation—The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass—The intentional diversion of waste streams from any portion of the collection or treatment facility.

Categorical Pretreatment Standards—National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity—Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Engineering Report—A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater

facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample—A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User—A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater—Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Interference— A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local Limits—Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Maximum Daily Discharge Limitation—The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Pass-through— A discharge which exits the POTW into waters of the—State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7.0 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug Discharge—Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate which may cause interference with the POTW.

State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria—A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids—That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of

various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit—A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C—TECHNICAL CALCULATIONS

Table 7: Wastewater information from the application

Parameter	Concentrations Measured			Analytical Method Std. Methods 19th edition	Detection Limit
	Minimum	Maximum	Average		
BOD (5 day)	<2.0 mg/L	25.9 mg/L	16.57 mg/L	5210	2 mg/L
COD	<5.0 mg/L	60.0 mg/L	35.7 mg/L	5220 B, C, or D	5 mg/L
Total Suspended Solids		24.0 mg/L		2540D	1 mg/L
Total Dissolved Solids		4800 mg/L		2540 C	
Conductivity		7480		2510 B	
Ammonia-N	1.21 mg/L	82.0 mg/L	53.20 mg/L	4500-NH ₃ C	20 µg/L
pH	6.1	9.6	Continuous	4500-H	0.1 units
Total Residual Chlorine	<0.1 mg/L	0.393 mg/L	<0.393 mg/L	4500-Cl E	1 mg/L
Fecal Coliform		<2.0 MPN		9222 D	
Total Coliform		<2400		9221 B or 9222 B	
Dissolved Oxygen		5.88 mg/L		4500-O C or 4500-O G	
Nitrate + Nitrite-N	2.0 mg/L	3.21 mg/L	2.76 mg/L	4500-NO ₃ E	0.5 mg/L
Total Kjeldahl N	27.1 mg/L	136 mg/L	67.83 mg/L	4500-N _{org}	20 µg/L
Ortho-phosphate-P		4.65 mg/L		4500-P E or 4500-P F	1 µg/L
Total-phosphate-P	2.22 mg/L	104 mg/L	37.60 mg/L	4500-P B.4.	1 µg/L
Total Oil & Grease	<5.0 mg/l	<5.0 mg/l	<5.0 mg/l	5520 C	0.2 mg/L
Total Petroleum Hydrocarbon	<5.0 mg/L	<5.0 mg/L	<5.0 mg/L	5520 D, F	
Calcium		393 mg/L		3500-Ca B	3 µg/L
Chloride		896 mg/L		4500-Cl C	0.15 µg/L
Fluoride	6.40 mg/L	19.7 mg/L	12.06 mg/L	4500-F D	0.1 mg/L
Magnesium	< 0.100 mg/L	17.5 mg/L	14.25 mg/L	3500-Mg B	0.5 µg/L
Potassium		27.0 mg/L		3500-K B	5 µg/L
Sodium		403 mg/L		3500-Na B	2 µg/L

FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST6200
WAFERTECH, L.L.C.

Parameter	Concentrations Measured			Analytical Method Std. Methods 19th edition	Detection Limit
	Minimum	Maximum	Average		
Sulfate	372 mg/L	964 mg/L	620.67 mg/L	4500-SO ₄ E	1 mg/L
Arsenic (total)	< 0.001 mg/L	0.011 mg/L	0.0061 mg/L	3114 B	2 µg/L
Barium (total)	0.003 mg/L	0.034 mg/L	0.019 mg/L	3500-Ba B	30 µg/L
Cadmium (total)	<0.001 mg/L	<0.001 mg/L	<0.001 mg/L	3500-Cd B	5 µg/L
Chromium (total)	<0.001 mg/L	0.007 mg/L	<0.004 mg/L	3500-Cr B	50 µg/L
Copper (total)	0.003 mg/L	0.0384 mg/L	0.024 mg/L	3500-Cu B	20 µg/L
Lead (total)	<0.001 mg/L	<0.001 mg/L	<0.001 mg/L	3500-Pb B	100 µg/L
Mercury	<0.0002 mg/L	<0.0002 mg/L	<0.0002 mg/L	3500-Hg B	0.2 µg/L
Molybdenum (total)	<0.005 mg/L	0.0186 mg/L	<0.019 mg/L	3500-Mo	1 µg/L
Nickel (total)	<0.05 mg/L	<0.05 mg/L	<0.05 mg/L	3500-Ni	20 µg/L
Selenium (total)	<0.001 mg/L	0.0191 mg/L	<0.0116 mg/L	3500-Se C	2 µg/L
Silver (total)	<0.001 mg/L	<0.001 mg/L	<0.001 mg/L	3500-Ag B	10 µg/L
Zinc (total)	<0.005 mg/L	0.040 mg/L	<0.040 mg/L	3500-Zn B	5 µg/L
Temperature ¹	21.5 °C	23.7 °C	22.7 °C		0.1 °C

¹ Wastewater information from Scott Inloes e-mail received on July 14, 2005.

APPENDIX D—RESPONSE TO COMMENTS

On September 13, 2005, the Department received comments regarding the proposed permit and also the fact sheet from:

- Doug Moody, CIH; Environment, Health and Safety Manager; WaferTech L.L.C.

The following is a list of comments received and the Department's responses to the comments regarding the proposed permit. The comments regarding the fact sheet, which can not be modified at this time, are listed for the record. WaferTech previously had an opportunity to provide factual comments regarding the fact sheet.

COMMENTS

Draft State Waste Discharge Permit:

Comment 1:

➤ Page 1,4,16 Permit Dates

Clarification:

Page 1: We understand that the permit should be for five years, and therefore we assume that the expiration date will be revised to a date five years in the future upon issuance.

Response 1:

WAC 173-216-110(2) specifies that, "The permits shall be for a fixed term, not exceeding five years." Therefore, the Department is not precluded from issuing the permit for less than five years.

The Department's records indicate that WaferTech is a significant contributor of ammonia to the City of Camas POTW². Further, the POTW periodically violates its ammonia NPDES³ permit limit. If the POTW keeps violating the ammonia limit, the Department will have no options but to limit ammonia discharges from all sources including WaferTech. As a result, the Department would like to revisit WaferTech's permit requirements when the permits for other dischargers to the POTW are reissued. All other permits are scheduled to be reissued in the period of July 1, 2007, through June 30, 2008; consequently this permit will be schedule for reissuance in the same period; for that reason the permit will be issued with an expiration day of June 30, 2008.

Action Taken:

None.

Comment 2:

Page 4 – Summary of Permit Report Submittals

² Publicly Owned Treatment Works

³ National Pollutant Discharge Elimination System

We request that the submittal date for the Toxicity Study Report and Plan be modified in accordance with our recommended revisions to Permit Section S9 (see comments below).

Comment 2:

The Department doesn't see any connection between the submittal date for the Toxicity Study Report and Plan and WaferTech's recommended revisions to Permit Section S9.

Action Taken:

None.

Comment 3:

Page 4 – Summary of Permit Report Submittals

In addition, the permit renewal date should match page 16 G7 date.

Response 3:

Comment noted.

Action Taken:

The permit renewal date on page 16 in General Condition G7 was changed to December 31, 2007, to match the date in the Summary of Permit Report Submittals.

Comment 4:

➤ **Page 5 – Section S1 HF Batch Treatment for Fluoride Removal**

Clarification: The HF waste is continuously treated in tanks and is intermittently discharged based on final tank level.

Response 4:

Comment noted.

Action Taken:

"HF Batch Treatment for Fluoride Removal" was changed to "HF Continuous Treatment for Fluoride Removal with Intermittent Discharge".

Comment 5:

➤ **Page 5 – Section S1 - Last paragraph**

Clarification: Spent sulfuric acid from our processes is beneficially re-used on site in the ammonia scrubbers to reduce air emissions. Virgin sulfuric acid is used at the wastewater treatment plant to control pH in various processes. WaferTech is requesting the routing of about 500,000 lbs a year of acid directly to the wastewater collection

system to allow additional flexibility in the future. This paragraph should be modified to indicate that this is an estimated annual discharge quantity.

Response 5:

Comment noted.

Action Taken:

The paragraph was modified to reflect the estimated annual discharge quantity. The maximum quantity of sulfuric acid daily discharge must be specified before the discharge is approved.

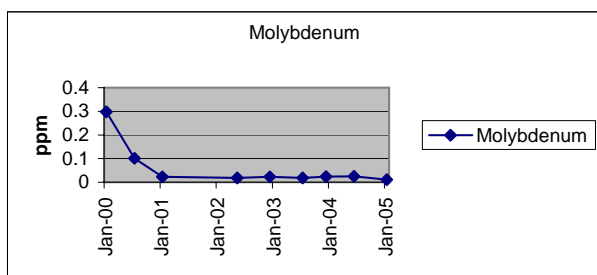
Comment 6:

➤ **Page 6 – Section S1 – Table 1**

1) Molybdenum -WaferTech requests deleting this monitoring requirement.

Molybdenum is not an ingredient in WaferTech processes. Molybdenum is used only in small amounts as an analytical reagent. There is no WDOE regulatory limit on surface water for molybdenum. WaferTech has reported an average of 0.020 ppm, per priority pollutants semiannual analysis for 2001-2005. Ecology indicated at our June 23rd meeting that values below 0.1 ppm would not be a concern and would not require monitoring. Since 2001, the test results have been less than 25% of this 0.1 ppm value. WaferTech believes that Ecology should replace the Figure 8 in the Fact sheet with the most current data (provided below) and remove the Molybdenum testing requirement.

Pollutant	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Average
	JAN-00	Jul-00	Jan-01	May-02	Dec-02	July-03	Dec-03	June-04	Jan-05	Jul 01-Jan 05
Molybdenum, Total	0.298	0.101	0.0229	0.0186	0.0229	0.0188	0.0241	0.0246	0.0105	0.0199



Response 6:

The Figure 8 in the fact sheet can not be replaced at this time. This comment and response to it was placed in the Appendix C of the fact sheet for the record.

Action Taken:

Molybdenum is removed from testing requirement based on the new data.

Comment 7:

2) Replace Total Kjeldahl [Kjeldahl] Nitrogen with ammonia in the testing requirement:

The majority of our nitrogen loading is from ammonia. Ammonia is a simpler test to perform. Ammonia is an indicator of the loading for the POTW. We are requesting that ammonia replace TKN in Table 1 of Section S1.

Response 7:

Comment noted.

Action Taken:

Total Kjeldahl Nitrogen was replaced with ammonia in the testing requirement, Table 1 of Section S1.

Comment 8:

➤ **Page 7 – Section S2 (A)**

Remove this section given that there are no testing requirement in permit:

Priority pollutant analysis data shall be submitted not later than 45 days following the reporting period.

Response 8:

Comment noted.

Action Taken:

The section was removed.

Comment 9:

➤ **Page 9 - Section S2 (F) - Dangerous Waste Discharge Notification**

The City and Ecology have been notified in the permit application of the waste WaferTech is treating by elemental neutralization and permit by rule.

Response 9:

Treatment by elemental neutralization of wastewaters listed in the permit application is permitted if not specifically excluded by the permit; however Hazardous Waste and Toxic Reduction Program at the Department needs to determine if the permit by rule applies for the purpose of complying with WAC 173-303.

Action Taken:

None.

Comment 10:

- **Page 9 – Section S2 (G) – Spill Notification**
This requirement includes the requirement of notification for “slug discharges”, however, there is no definition of the conditions (i.e. volume and duration of discharge) that could constitute a “slug discharge”.

Response 10:

Comment noted.

Action Taken:

The following definition of the slug discharge is incorporated to the permit:

A slug discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, 40 CFR 403.8.

Comment 11:

- **Page 12 – Section S4 C(1)**
Comment: Our cooling water is recycled in our cooling towers. The cooling tower blow down is treated in our NS-75 equipment at our WWTP. This use has been addressed in the permit application and should continue to be allowed.

Response 11:

Discharge of noncontact cooling water in significant volumes is prohibited under WAC 173-216-060 unless approved by the Department under extraordinary circumstances. WaferTech did not disclose any extraordinary circumstances during the application process; therefore only discharge of noncontact cooling water in non-significant amount is allowed.

Action Taken:

None.

Comment 12:

- **Page 12 - Section S4 (C2)**
Comment: Permit by rule allows for treatment of various wastes on site (WAC 173-303-802). An example is neutralization of acid and bases.

Response 12

Unless specifically authorized in this permit, the discharge of dangerous wastes as defined in Chapter 173-303 WAC, is prohibited. See WAC 173-303-802(5) for details.

Action Taken:

None.

Comment 13:

➤ **Page 12-13 - Section S8 - Effluent Toxicity Study:**

Toxicity Issue:

Wafer Tech is presently coordinating and assisting the City of Camas in their evaluation of treatment process operations and potential links to effluent toxicity. Wafer Tech and the City of Camas are developing a letter of cooperation on these issues. The City of Camas is engaged in these studies at this time, and the results of the treatment process evaluation and continued effluent toxicity bioassays will provide the results that are needed to discern whether in-plant treatment operations or influent to the plant are the source of periodic effluent toxicity problems, including periodic elevated effluent ammonia. Through this cooperative working arrangement with Camas, it may prove necessary to collect influent samples from separate lines feeding the treatment plant and to conduct a treatment study. This iterative approach to resolving these treatment and toxicity issues for Camas needs to be performed in a logical and step-wise order. Therefore, we are requesting that the Permit language in Section S8 be modified to read as follows:

“If the City’s investigation indicates that the root cause of their problem is the main line that WaferTech discharges into, then the Permittee shall study the potential impacts of the Permittee’s discharge on the toxicity of the POTW’s treatment process. If required by Ecology, then the WaferTech Toxicity Study shall be conducted and submitted for the Department’s review within 12 months after being notified by Ecology that the study is required. Ecology’s notification of this study requirement will be based on the data and evaluation from the City’s investigation of the POTW.”

Dissolved solids: The studying of osmotic stress and plan to control TDS should be eliminated from this permit.

- 1) Based on the information below there is not evidence that TDS is causing operational issues at the City of Camas POTW.
- 2) The City of Camas has variations in dissolved solids mostly during rain events. But unfortunately, the City does not collect TDS data. The normal dry flow at the City is 2 MGD and wet weather flow can be over 4 MGD. Osmotic stress has not been documented to be a problem at the City of Camas POTW.
- 3) WaferTech operates 24 hour a day, 7 days weeks with very little change in chemical usage. This results in a constant loading to the City’s POTW. The majority of the TDS from the WaferTech facility is due to CaCl_2 that is added to treat hydrofluoric acid to meet limits in this permit.
- 4) In April of 2005 during an upset at the City of Camas POTW, the wastewater flow went from 1.4 MGD to 3.0 MGD over a few days period. The best estimate is that the dissolved solids contribution from WaferTech at the City of Camas

POTW dropped from 2,500 ppm to less than 1,500 ppm during this time period. The amount of ammonia treated per day stayed the same, which supports the understanding that osmotic stress is not an issue at the City of Camas POTW.

- 5) The addition of 500,000 lbs of sulfuric acid, metered throughout the year would only increase the dissolved solids about 400 ppm to a total of less than 2,000 ppm at the influent, well below the 8,000 ppm. The City of Camas had their engineering consultant (Gray and Osborne, Inc.) review various engineering sources regarding the dissolved solids issues, and this was summarized in a letter dated March 18, 2005. Gray and Osborne indicated a concern when the dissolved solids are over 8,000 ppm, which is substantially above the TDS levels from WaferTech's discharge to the POTW. Gray and Osborne's evaluation states; "Thus, the increases in TDS from the WaferTech discharge is not expected to cause negative impacts to the WWTP operations."

Response 13 (Randall Marshall):

The description by WaferTech in its comments of the actions they have taken along with the City of Camas indicate a willingness to conduct the study required in S.8. of the permit and investigate the potential effect of the WaferTech discharge on the city treatment plant. The study should be completed and the report submitted as required in the permit in order to thoroughly document its findings. The fact sheet outlines the reasons for Department's concerns and was based on information provided by WaferTech and contained in scientific literature. WaferTech should continue to coordinate with the city in completing the study and keep in mind that the permit allows the use of any assessments already done or ongoing by the POTW.

The purpose of the Effluent Toxicity Study required in S8 is broader than just assessing the toxicity of the WaferTech wastewater constituents which pass through the City of Camas treatment plant. The effect of the high total dissolved solids (TDS) in the WaferTech wastewater on the efficiency of the city's treatment plant needs to also be determined. This determination is especially important in consideration of the fact that the city treatment plant has had difficulty with nitrification since April 2002 and that the city's discharge has had ammonia concentrations which vary dramatically and have gotten above 40 mg/L⁴. These high concentrations of ammonia will cause toxicity in the city's effluent and result at a minimum in an acute whole effluent toxicity (WET) limit and ongoing compliance monitoring for the city. The high ammonia concentrations have already been determined to have a reasonable potential to exceed water quality standards in the Columbia River and the city has been assigned ammonia limits for this reason. Not only does the effect of the high TDS in the WaferTech discharge need to be assessed but also the effect of changes in the TDS concentration on the city treatment plant's activated sludge.

The study by WaferTech may incorporate any assessments already done or ongoing by the City of Camas. That the City of Camas is currently doing WET testing will enhance the ability of WaferTech to evaluate the potential for their discharge to cause toxicity in the Camas effluent. Coordinating with the city might save WaferTech some cost. In addition to the toxicity testing, the city will be measuring ammonia concentrations and several other parameters relevant to treatment plant efficiency and effluent toxicity. One

⁴ The Department will have no option but to set an ammonia limit in WaferTech's future permits if the POTW is unable to nitrify.

important goal of the requirement in S8 of the WaferTech permit is to encourage coordination so that the city and WaferTech can evaluate together the effect of the WaferTech discharge on the city wastewater treatment plant. It would be expensive for the city to struggle to meet a WET limit or ammonia limit and then find out on its own that the WaferTech discharge played a role in the difficulties.

Action Taken:

None.

Comment 14:

➤ **Page 13 - Section S9 - Slug Discharge Control Plan**

Ecology stated in the Fact Sheet that the Permittee has the potential for a batch discharge of a spill that could adversely effect the POTW, and Ecology cited 40 CFR 403.8(f) as the basis for requiring a slug discharge control plan. After reviewing the federal requirements specified in 40 CFR 403.8(f), it is clear that it enables the POTW to limit and control the contributions to the POTW however, the Slug Discharge Control Plan should only apply to those pollutants regulated by the pretreatment program (hydrofluoric acid and Total Toxic Organics). We recommend that the language in Section S9 be revised to specify the pollutants that are applicable to the Slug Discharge Control Plan.

Response 14:

The Department agrees that the Slug Discharge Control Plan should apply to those pollutants regulated by the pretreatment program; however those pollutants are not limited to the hydrofluoric acid and Total Toxic Organics.

According to 40 CFR 403.8:

If the POTW [the Department] decides that a slug control plan is needed, the plan shall contain, at a minimum, the following elements:

- (A) Description of discharge practices, including non-routine batch discharges;
- (B) Description of stored chemicals;
- (C) Procedures for immediately notifying the POTW of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5(b), with procedures for follow-up written notification within five days;
- (D) If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response;

According to 40 CFR 403.5(b):

Specific prohibitions. In addition, the following pollutants shall not be introduced into a POTW:

- (1) Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21.
- (2) Pollutants which will cause corrosive structural damage to the POTW, but in no case Discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such Discharges;
- (3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in Interference;
- (4) Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW.
- (5) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40 °C (104 °F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits.
- (6) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
- (7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
- (8) Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Action Taken:

None.

Comment 15:

Drop page 14:

This is a repeat of the end of page 13.

Response 15:

Comment noted.

Action Taken:

The repeated paragraph was removed.

WaferTech's Comments Regarding the Fact Sheet 16:

➤ **Page 3 HF Batch Treatment for Fluoride Removal**

Clarification: The HF waste is continuously treated in tanks and is intermittently discharged based on final tank level.

➤ **Page 4: Permit Status**

WaferTech is requesting the routing of about 500,000 lbs a year of acid directly to the wastewater collection system to allow additional flexibility in the future. This paragraph should be modified to indicate that this is an estimated annual discharge quantity.

➤ **Page 4: Effluent Toxicity**

Add to the end of the first paragraph – “Based on mixing with other wastewater sources the estimated TDS concentration reaching the Camas POTW that is due to WaferTech would be less than 2,000 ppm.”

Change second paragraph to read:

“The City of Camas has performed whole effluent toxicity test three times to demonstrate compliance with chapter 173-205. The first test was conducted in the 1999-2000 time period, when the effluent ammonia levels were low. The survival rates for these bioassays were high. With the renewal of the Camas NPDES Permit, additional WET acute and chronic effluent bioassays have been performed in 2005. These WET tests were conducted in June through August 2005, when effluent ammonia levels were higher. The survival rates were slightly lower than prior testing, and additional whole effluent toxicity testing will be performed in 2005. It has not been determined what is the cause for the lower survival rate in the Camas effluent WET tests.”

Change the third paragraph to read:

Based on the information below there is not evidence that TDS is causing operational issues at the City of Camas POTW.

- 1) The City of Camas has variations in dissolved solids mostly during rain events. But unfortunately, the City does not collect TDS data. The normal dry flow at the City is 2 MGD and wet weather flow can be over 4 MGD. Osmotic stress has not been documented to be a problem at the City of Camas POTW.
- 2) WaferTech operates 24 hour a day, 7 days weeks with very little change in chemical usage. This results in a constant loading to the City’s POTW. The majority of the TDS from the WaferTech facility is due to CaCl_2 that is added to treat hydrofluoric acid to meet limits in this permit.
- 3) In April of 2005 during an upset at the City of Camas POTW, the wastewater flow went from 1.4 MGD to 3.0 MGD over a few days period. The best estimate is that the dissolved solids contribution from WaferTech at the City of Camas POTW dropped from 2,500 ppm to less than 1,500 ppm during this time period. The amount of ammonia treated per day stayed the same, which supports the understanding that osmotic stress is not an issue at the City of Camas POTW.
- 4) The addition of 500,000 lbs of sulfuric acid, metered throughout the year would only increase the dissolved solids about 400 ppm to a total of less than 2,000 ppm at the influent, well below the 8,000 ppm. The City of Camas had their

engineering consultant (Gray and Osborne, Inc.) review various engineering sources regarding the dissolved solids issues, and this was summarized in a letter dated March 18, 2005. Gray and Osborne indicated a concern when the dissolved solids are over 8,000 ppm, which is substantially above the TDS levels from WaferTech's discharge to the POTW. Gray and Osborne's evaluation states; "Thus, the increases in TDS from the WaferTech discharge is not expected to cause negative impacts to the WWTP operations."

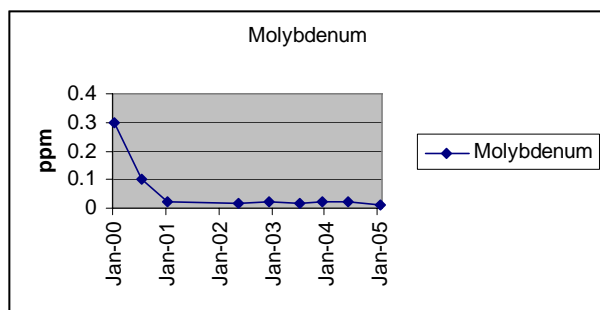
Add two paragraphs summarizing activities at the City of Camas POTW:

The City of Camas received a new permit in December 2004 with ammonia limits. The City is conducting a review of the outfall and Columbia River pH to improve the data used to set the ammonia limit in their permit. In a letter dated May 23, 2005 the City requested a modification of the ammonia effluent limits. The City expects to submit a modification of the diffuser design to Ecology for approval by the end of 2005. The modification of diffuser would be completed in spring of 2006, and this will increase the dilutions allowing Ecology to increase the effluent limit for ammonia.

The City of Camas has also hired a consultant to review the design and operations of the activated sludge process to improve the ammonia removal rate. The low BOD loading to the plant is a concern to operations. The low BOD loading requires elevated return activated sludge to remove ammonia. The City has completed various tests to improve the ammonia removal rate. WaferTech has been working with the City of Camas to improve ammonia treatment. At this time, ammonia removal rate is limited to 400-800 lbs per day. Design, operations, or inhibitory chemicals may limit the ammonia removal rate.

➤ **Page 7: Figure 8**

Replace the Figure 8 in the Fact sheet with the most current data.



Pollutant	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Ppm	Average
	Jan-00	Jul-00	Jan-01	May-02	Dec-02	July-03	Dec-03	June-04	Jan-05	Jul 01-Jan 05
Molybdenum, Total	0.298	0.101	0.0229	0.0186	0.0229	0.0188	0.0241	0.0246	0.0105	0.0199

➤ **Page 9: Table 4:Local limits**

Ecology should indicate that this permit suspended the local pH limit for WaferTech.

➤ **Page 12: Other Permit Conditions**

The summary of other permit conditions does not include the Effluent Toxicity Study (S8) in this summary. This should include a short summary of the revised conditions of S8.